

PRODUCTION

A Critical Examination of Present Methods of British Military Aircraft Manufacture, and of the Past Methods which Led Up to Them : Some Constructive Suggestions.

By A PRODUCTION ENGINEER

IT is generally agreed in aeronautical circles that the smaller firms, in particular, have suffered from lack of appreciation and forethought on the part of various politicians—politicians who are responsible for the fact that this country is behindhand with the design and production of military aircraft, most especially in the design and manufacture of airframes rather than engines. Let us look a little more closely into the matter, taking the history of military aircraft production during the last 25 years as our starting point.

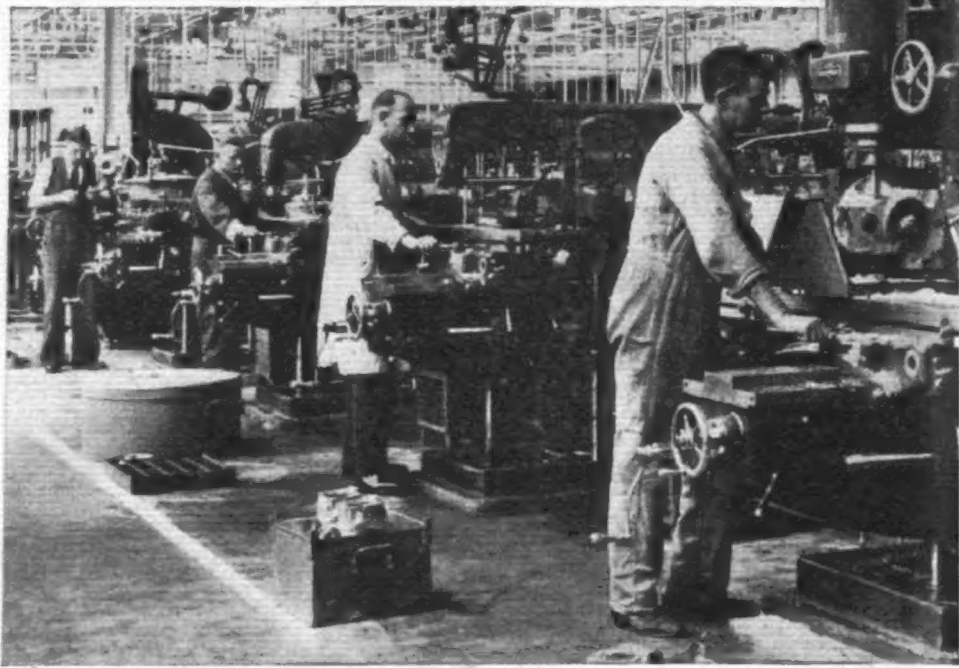
Prior to the last war, aeroplanes had been used on the Army manoeuvres, but the authorities thought of them only as means of observation, not as offensive weapons, so that when the war started in 1914 such aeroplanes as existed were not equipped with guns, cameras, bomb gear, etc. As the war proceeded, the necessity of turning aeroplanes into fighters and bombers became apparent, and new designs embodied the requisite equipment. The machines were of simple construction, being made of wood, steel plates, wire, and fabric; deliveries of production orders of new types could commence in about six to eight months from date of conception. The extensive use of wood enabled a very large number of wood-working craftsmen to be utilised.

The Air Ministry technical and inspection staffs were engaged from outside industries. They were not hidebound by extensive specifications and regulations. They were allowed to use their own common sense. They were willing to work hard and help to obtain high-pressure production in the works to which they were posted.

Labour per aircraft was much smaller than it is with modern machines; the work was simpler and not to such a high standard; more unskilled and semi-skilled labour could be used. Moreover, if a part was not 100 per cent. perfect workmanship, but was safely passable, it was used and not scrapped.

Shortage of engines, instruments, A.G.S. parts, etc., did occur, and eventually production officials were posted to the various works. Their duty was to progress such supplies, and the scheme worked very well. Also, there was centralised control of the distribution of materials and plant, so that these items were sent to works where they were most wanted.

To-day, so many of the lessons learned then appear to have been forgotten. However efficient a firm's production



manager may be, he cannot make real use of his ability unless he has adequate supplies of labour, plant and materials, and the loyal help of the Air Ministry staff stationed at his works.

After the war, the Government of the day decided to cut down expenses to a minimum. Contracts were cancelled, private and national factories were closed down, plants and stocks sold, staffs and workpeople disbanded. Many firms went out of the aircraft industry. A few stayed in and shareholders lost a lot of their capital.

Later, small reconditioning contracts were issued to firms to help them to keep going, and the system of design competition came into being. In its early days this system turned out to be a further drain on the resources of the industry, in that the sums spent by the industry in new designs was, in the aggregate, much larger than the possible profits from any contracts obtained.

This system has never given good results. Between the time when the Service put forward their views as to the requirements of a new type and the time when the type had been produced in sufficient quantities to equip Service units, a period of four to five years sometimes elapsed.

Later, larger contracts were issued as the old war-time stock was used up, and some firms began to make profits, but it is a fairly safe generalisation to make that at no time up to the expansion period were more than a third of the firms

in the industry able to make profits. The majority of the profit-makers belonged to the larger groups, who were able to exercise greater influence. It is obvious that the smaller firms had a very thin time between years 1918 and 1935.

During this period the technical and inspection staffs at the Air Ministry constantly added to their requirements and restrictions. The type of construction changed mainly from wood and fabric to metal and fabric. Materials specifications were so tightened up that materials became almost impossible to buy. Every accident or failure in the Service brought new restrictions, thereby slowing down design and production, so that by the time the Service were equipped

This Article Maintains that—

NOT until some three years after expansion started did the Government approach Organised Labour to assist them.

The present Air Ministry organisation is unwieldy and the staffs much too large.

The aircraft industry should be allowed to think for itself and anticipate its customers' requirements.

Air Ministry technical, production, contracts and costing departments should be decentralised into areas.

The principal designing firms should be allotted types on which to specialise, and should be allowed direct contact with Service units using them.

For certain duties wooden aircraft, manufactured by non-specialised plant and labour, could be easily, quickly and cheaply produced